To: Burdick, Melanie[Burdick.Melanie@epa.gov]
From: Wilson, Kristina (DEQ)
Sent: Fri 4/27/2018 8:27:46 PM
Subject: FW: Pierce Model Water Balance Calculations & Revised Estimate of Temporary Impacts
6-Foth_Pierce Hydrograph_WL-2b_lobe.xls
6-Foth_Pierce Hydrograph_WL-6.xls
6-FOTH_Pierce_Hydrograph_WL-40-41.xls
6-Foth_Pierce Hydrograph_WL-A1 east_lobe.xls
6-Foth_Pierce Hydrograph_WL-A1 west_lobe.xls
6-Foth_Pierce Hydrograph_WL-B1.xls
6-Foth_Pierce Hydrograph_WL-C1_lobe.xls

FYI

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From: Jeff King [mailto:jking@king-macgregor.com]
Sent: Friday, April 27, 2018 4:16 PM
To: Pennington, Michael (DEQ) <PENNINGTONM@michigan.gov>
Cc: Wilson, Kristina (DEQ) <WilsonK17@michigan.gov>; Seidel, Teresa (DEQ) <SEIDELT@michigan.gov>; Fish, Kim (DEQ) <FISHK@michigan.gov>; 'Barry Hildred' <BHildred@aquilaresources.com>; 'David Anderson' <danderson@aquilaresources.com>; 'Donohue, Dennis' <DDonohue@wnj.com>; 'Donohue, Steve' <Steve.Donohue@Foth.com>; 'Donald Tilton' <dtilton48@sbcglobal.net>; 'Mike Welch' <mwelch@aquilaresources.com>; 'Nimmer, Mike' <Mike.Nimmer@Foth.com>
Subject: Pierce Model Water Balance Calculations & Revised Estimate of Temporary Impacts

Mike –

Attached are water balance spreadsheets for wetlands 2b, 6, 40/41, A1East, A1West, B1 and C1 Lobe on the Aquila Back Forty site. As you requested, these water balances use a version of the Pierce water balance approach that assumes: (1) there is no surface runoff contribution to the wetlands other than snowmelt and one November rain event of 2.5 inches, and (2) an infiltration rate of 6 inches per month. As you know, we have a good faith difference of opinion about whether either of these assumptions reasonably reflect regional conditions or actual hydrology on the Back Forty site and whether or not these assumptions accurately portray potential indirect impacts. These differences aside, we appreciate the time you have put into this effort and are therefore proposing a solution to this issue that attempts to take into account all of the effort that you and your staff, as well as our client and consulting team have put into resolving this issue over the past year.

Based on the outputs from your iteration of the Pierce model and taking into consideration our estimate of indirect impacts associated with our permit application, we are now suggesting we use an estimate of potential indirect wetland impacts ranging from approximately 17 acres to approximately 31 acres, with no off-site impacts. These estimates include the estimated loss of 6.15 acres of wetland at WL14/14a/15 (as suggested in the original permit application), an estimated loss of 12.48 acres (as compared to the 1.93 acres in the original permit application, so 10.55 acres more) in the western lobe of Wetland A1, and 1, and an estimated loss of 3.60 acres (as compared to the 0.10 acres in the original permit application, so 3.50 acres more) along with approximately 231 linear feet of intermittent stream in Wetland 6. We think the sensitivity analyses that Foth performed on their estimates in the application, in addition to the use of the Pierce Model, supports this position. And that the permit application now be considered as a request to impact up to approximately 42 acres of wetland, approximately 31 acres of which would be indirect and temporary.

While it would be possible to continue to generate new estimates of potential indirect impact by using different water balance models and/or combinations thereof by modifying the inputs into those models and making different calculations of acres of impact based on the outputs of these models, we think it is important to add context here and evaluate this

important issue from a broader perspective. In our view, continuing to orchestrate differences of a few to several acres in estimated potential impacts is not as useful as focusing on actual practical considerations associated with the project and their interplay with the ultimate impacts to regulated aquatic impacts that the Back Forty Project will have. In that regard, we again emphasize that these indirect impacts – to the extent they are actually realized at all – will not occur until late in the mine life. Those impacts will only start occurring a few years before commencement of reclamation, and well after a few to several years of continued wetland monitoring and assessment. Such monitoring and assessment will provide Aquila (and MDEQ) with voluminous additional data and insight into area hydrology, the impacts of mine operations on that hydrology and refinement of adaptive management triggers and techniques that would mitigate or prevent any such impacts. Further, most if not all of these impacts would be temporary in nature, ending once reclamation is complete. Finally, since we are primarily dealing with forested wetlands, any impacts or temporary changes to wetland hydrology related to reducing water inputs during the growing season may actually serve to temporarily benefit at least the trees in these wetlands.

Assuming our above math is correct, the total requested permit impact would be 42.4 acres, 11.2 acres of which would be permanent, and 31.2 which would be temporary. In order to mitigate for this acreage of impact, and upon confirmation from MDEQ that we are on the right track with this position, we will be revising the mitigation plan as presented in our permit application to accommodate the additional 14 acres of temporary indirect impact as well as the temporary impact to an additional 231 feet of stream.

We look forward to discussing these issues with you further.

Jeff